My point is this: State hospital populations, because of their long average residence, possibly because they are selected as insane, and because they do not in the first instance come to a surgeon seeking relief from the pressure symptoms, offer unusual opportunities for surveys of the incidence of pituitary symptoms to balance the intensive studies of the surgeon and experimentalist. For this more superficial work special methods of diagnosis are relatively unimportant; good routine physical examinations are wanted. Nothing better illustrates the value of the conscientious physical record than a glance at histories from a polyglandular viewpoint, and happily nothing so alleviates the tedium of what is often regarded as a useless task as the realization of interrelationships which give life and color to an otherwise bald and uninteresting statement of facts.

THE VALUE OF AUTO-INOCULATION IN PULMONARY TUBERCULOSIS.[1]

By Harry Lee Barnes, M.D.,
SUPERINTENDENT OF STATE SANATORIUM, WALLUM LAKE, RHODE ISLAND.

Dr. Marcus Patterson, of Frimley, claims to influence the course of pulmonary tuberculosis favorably by "auto-inoculations" induced by labor. He states that even "severe" auto-inoculations, if controlled by immobilization, benefit the patients. He considers that "the aim should be to increase the patient's labor—insofar as is consistent with his physical capacity—in order to produce a marked deviation in the temperature on one or another of the grades, and finally enable him to do five hours hard outdoor work with little deviation." To collect evidence which shall help us to judge the value of such auto-inoculations is the object of this paper.

That graduated exercise has great value in attaining health and in preparing the body for athletic contests or work was well known to the ancients. Brehmer recommended exercise for consumptives. Walther prescribed graduated walking exercises for his patients for many years at Nordrach. Graduated labor as a therapeutic measure seems to have been first applied systematically to consumptives in sanatoria by Dr. Lawrence F. Flick. Great credit for elaboration of the system and popularizing it, for calling attention to the symptoms of slight "auto-inoculations," and the importance of treating them is due to Dr. Patterson.

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[1] Read before the National Association for the Study and Prevention of Tuberculosis, Washington, D. C., May 8, 1913.

While unrecognized auto-inoculations may, of course, occur without rise of temperature or other symptoms, yet the most important single symptom of auto-inoculation and the one chiefly relied on for this study was a rise of temperature above 99°. Patterson considers even 99°, with headache, loss of appetite, or other marked constitutional symptoms, reliable evidence of auto-inoculation in men and 99.6° in women. Many tuberculous women are subject to a rise of a few tenths of a degree during menstruation, but at other times I have not found so marked a difference between men and women.

While it may be admitted that a temperature of 99° in some individuals does, and that 99.2° or even 99.4° in other individuals does not, usually mean tuberculous toxemia, yet it was considered the safest guide for this work.

Shortly after the opening of the institution it became our routine practice to interview patients with temperature over 99.5° and record the complications on the temperature charts. All complications causing fever were therefore eliminated with reasonable accuracy. The material at hand consisted of the records of 1517 patients discharged from the Rhode Island State Sanatorium during the years 1906 to 1911 inclusive. All far-advanced cases and all moderately advanced cases whose temperatures were not reduced absolutely to normal for periods of two or three weeks were eliminated. All tuberculin-treated patients, all children, and likewise all colored persons, have been excluded as not forming a fair basis of deduction. In the following table the remaining 746 patients have been classified according to the average frequency of the fever days in the left-hand column, and according to their present condition in the remaining columns. The majority of these auto-inoculations were between 99° and 99.6°, and for one or two consecutive days only, but a small minority had long runs of fever.

TABLE I.—End Results Classified According to the Average Frequency of Fever Days.

Average frequency of temperature.	Well.	Living and working.	Living.	Dead.	Totals.	Per cent. Dead.
3 times week	12	9	8	50	70	63
2 times week	30	20	25	69	114	47
Once in 1 week	62	39	30	74	205	36
" " 2 weeks	34	21	14	33	102	32
" " 3 weeks	22	16	14	14	66	21
" " 4 weeks	16	16	11	14	57	23
" " 2 months	12	9	6	5	32	15
" " 3 months	6	6	4	1	17	5
" " 6 months	10	..	2	..	12	0
Never	10	12	5	5	32	15
Totals	214	148	119	205	746	35

From the above table it appears that both the recovery and the mortality rate of tuberculous patients bear a pretty constant relation to the number of auto-inoculations as determined by the number of fever days. Everyone would expect that patients who had some fever with an average frequency of three, two, or even one day in a week would turn out badly. But if occasional auto-inoculations evidenced by slight fever are beneficial, should not those who have auto-inoculation on an average of one day in two, three, or four weeks do better than those who have them one day in two, three, or six months, or none at all?

The great majority of the 93 patients whose fever days averaged one day in two months or more of residence had only a slight initial fever for a few days after admission, so that they had no inoculations which would be considered of therapeutic value by Patterson, and yet these are the patients whose recovery best stood the test of time.

Our patients are kept in bed with a temperature of 100° or over if persistent, and for anything above 99° in the morning; but as we have not carried out the complete immobilization described by Patterson, it may be said that some of the patients not receiving this complete immobilization were injured by these auto-inoculations which otherwise might have benefited them. To ascertain whether lack of control of the immobilizations could have affected the result, and also to eliminate from consideration the worst types of cases, all patients whose temperatures were not always reduced to 99° or below in less than one week were excluded from the following tabulation:

Table II.—End Results Classified According to the Average Frequency of Fever Days. All Auto-inoculations Controlled in Less than a Week.

Frequency of fever.	Well.	Living and working.	Living.	Dead.	Total.	Per cent. Dead.
2 times week	3	3	2	6	14	42
Once in 1 week	20	14	9	17	60	28
" " 2 weeks	24	12	12	18	66	27
" " 3 weeks	17	13	11	14	55	25
" " 4 weeks	14	14	12	10	50	20
" " 2 months	13	9	6	6	34	14
" " 3 months	5	6	3	1	15	6
" " 6 months	9	0	2	0	11	0
Never	9	13	5	5	32	15
Totals	114	84	62	77	337	22

That the results in patients who had no reactions were not quite so good as those who averaged one auto-inoculation in six months, may fairly be explained by the fact that the former had an average residence of only 2.8 months against 6.5 months for the latter.

The principle that the fewer the fever reactions the more permanent the results is clearly seen in Table II, which also shows that the poor results in those having auto-inoculations was not due to lack of prompt control.

All our patients had been on a system of graduated exercise and work about the institution since the fall of 1905. The system is similar to Dr. Patterson's except that there has been no so-called "complete immobilization" and no graduation of labor in foot pounds, and that in our application of graduated labor we have been trying to avoid instead of trying to induce temperature reactions. In order to be discharged "disease arrested," our classification requires that there must have been no hemoptysis, acute pleurisy, troublesome cough, nor fever temperature over 99° for at least two months, the weight, strength, etc., being restored to normal. Tubercle bacilli may or may not be present. The majority of our patients discharged with their disease arrested have been worked up to four or four and one-half hours labor, such as sweeping, scrubbing, and waiting on table, in addition to three or four hours' walking exercise, but a few have not done quite so much. In order to make a more searching inquiry as to the value of auto-inoculations under graduated labor, the records of 169 patients who were classified as "disease arrested" on discharge have been tabulated in two classes: (1) Those who were either afebrile throughout the entire period of sanatorium residence or whose slight fever subsided in a week or two after admission and afterward remained afebrile, and (2) those who had occasional auto-inoculations over a considerable period, but whose temperature finally settled absolutely to normal for over a month before discharge. In most cases this period of normal was at least six or eight weeks. Patterson's rule of ignoring an occasional rise of temperature in women provided it kept under 99.6° and was unaccompanied by constitutional symptoms was followed. A few who had a single rise to 99.5° or less were allowed in Class 1. No patients were admitted to Class 2 unless they had at least three auto-inoculations, and the majority had from three to six. Patients in Class 1 had their disease arrested without auto-inoculations, as indicated by fever, and those in Class 2 had their disease arrested after a period during which they had occasional auto-inoculations, as evidenced by fever.

The present condition of these patients is shown in the following table:

TABLE III.

	Well.	Living and working.	Living.	Dead.	Total.	Per cent. Dead.
Class 1, without auto-inoculations	28	18	10	9	65	13.8
Class 2, with auto-inoculations	39	31	13	21	104	20.2
Total	67	49	23	30	169	

While pulmonary tuberculosis is progressing favorably toward arrest, the value of graduated labor in restoring the normal muscular tone in working people, provided it can be done without inducing symptoms, can hardly be denied. There is some risk that fever reactions may be induced no matter how much we try to avoid them, but this risk must obviously be taken sometime if the patients' usefulness is ever to be restored. Graduated labor has value as a test for the patients' fitness to return to work, and also as a means of avoiding the injury to intellect and morals resulting from long continued idleness. However attractive the theory may be that fever reactions induced by labor have a curative value in pulmonary tuberculosis it cannot be accepted until proved by comparing the subsequent histories of patients who have had such reactions with similar patients who have not had them.

SUMMARY. 1. The fewer the fever days in pulmonary tuberculosis the better the chance of recovery.

2. Patients who have had no auto-inoculations evidenced by fever during sanatorium residence have a very high recovery rate.

3. Patients who finally achieve a stable temperature after a period of occasional auto-inoculations do not avoid relapse so successfully as those who obtain arrest without such period of auto-inoculations.

4. It should be our aim to avoid rather than to induce fever reactions, or auto-inoculations, in pulmonary tuberculosis.

THE EARLY SYMPTOMATOLOGY OF CANCER OF THE ESOPHAGUS.

HENRY H. JANEWAY, M.D.,

ASSISTANT SURGEON TO THE CITY HOSPITAL, NEW YORK.

(From the Laboratory of Experimental Surgery, New York University and Bellevue Hospital Medical College.)

DURING the past two years the writer has had occasion to examine a considerable number of patients having cancer of the esophagus, and has been impressed with the difficulty which is experienced by the profession in recognizing the early symptoms of this disease. Aside from any practical reasons relative to a safe operative treatment of cancer of the esophagus, the mere desirability of knowing at the start the real condition of any patient should be sufficient reason for making an early diagnosis. In other words, to aim to make the earliest possible diagnosis of any pathological condition is but a part of the perfecting of medical science, and, even if the condition may be at present incurable, we should rather